

Application Serial No: 10/037,808  
In reply to Office Action of 05 May 2004

Attorney Docket No. 79530

AMENDMENTS TO THE CLAIMS

1. (currently amended) A semi-fuel cell stack comprising:

a housing;

an anode and a porous cathode in said housing;

an aqueous catholyte stream of hydrogen peroxide flowing  
within said housing;

an aqueous anolyte stream flowing in said housing; and

a membrane which allows selective ion transfer of OH<sup>-</sup> ions  
through said membrane and into the anolyte stream and  
which inhibits transfer of hydrogen peroxide through  
said membrane means for preventing migration of said  
catholyte through the porous cathode and into the  
anolyte stream.

2. (currently amended) A semi-fuel cell stack according to  
claim 1 wherein said ~~migration preventing means~~ membrane is in  
contact with said porous cathode.

Application Serial No: 10/037,808  
In reply to Office Action of 05 May 2004

Attorney Docket No. 79530

3. (currently amended) A semi-fuel cell stack according to claim 2 wherein said ~~migration preventing means comprises a material covering~~ membrane covers a surface of said porous cathode.
4. (currently amended) A semi-fuel cell stack according to claim 2 wherein said membrane is impregnated into said porous cathode.
5. (canceled).
6. (original) A semi-fuel cell stack according to claim 1 wherein said cathode comprises a catalyzed material.
7. (original) A semi-fuel cell stack according to claim 1 wherein said cathode comprise a carbon fiber matrix catalyzed with at least one of palladium and iridium.
8. (original) A semi-fuel cell stack according to claim 1 further comprising means for creating a plurality of flow channels for said catholyte attached to said anode.

Application Serial No: 10/037,808  
In reply to Office Action of 05 May 2004

Attorney Docket No. 79530

9. (original) A semi-fuel cell stack according to claim 8 wherein said flow channel creating means is formed from an electrically non-conductive material.

10. (original) A semi-fuel cell stack according to claim 1 wherein said anolyte stream comprises a NaOH/seawater electrolyte stream.

11. (canceled).

12. (original) A semi-fuel cell stack according to claim 1 wherein said anode is formed from an aluminum containing material.

13. (original) A semi-fuel cell stack according to claim 1 wherein said catholyte comprises an aqueous sodium hypochlorite solution.

14. (original) A semi-fuel cell stack according to claim 1 further comprising:

at least two anodes within said housing;

Application Serial No: 10/037,808  
In reply to Office Action of 05 May 2004

Attorney Docket No. 79530

at least two porous cathodes within said housing;

means attached to each of said anodes for creating a  
plurality of flow channels for said catholyte;

means attached to a surface of each of said porous cathodes  
for preventing migration of said catholyte through  
each said cathode; and

a plurality of anolyte flow streams within said housing  
with each of said streams flowing between a surface of  
one of said anodes and a surface of said migration  
preventing means.

15. (original) A semi-fuel cell stack according to claim 14  
wherein:

each of said anodes is formed from an aluminum containing  
material;

each of said porous cathodes is formed from a porous  
material which has been catalyzed with at least one of  
palladium and iridium;

Application Serial No: 10/037,808  
In reply to Office Action of 05 May 2004

Attorney Docket No. 79530

said anolyte comprises an aqueous seawater/NaOH solution;

said catholyte comprises an aqueous hydrogen peroxide  
solution; and

said migration preventing means comprises a membrane for  
allowing a flow of  $\text{OH}^-$  ions through the membrane into  
said anolyte stream while inhibiting the transfer of  
hydrogen peroxide through the membrane.

16. (currently amended) A method for operating a semi-fuel cell  
stack comprising the steps of:

providing a housing having at least one anode and at least  
one porous cathode;

flowing a catholyte stream into contact with said at least  
one porous cathode through at least one catholyte  
channel;

flowing an anolyte stream into contact with said at least  
one anode through at least one anolyte channel; and

Application Serial No: 10/037,808  
In reply to Office Action of 05 May 2004

Attorney Docket No. 79530

providing each said cathode with a membrane which allows OH<sup>-</sup>  
ions to pass through said membrane while inhibiting a  
flow of hydrogen peroxide through said membrane  
thereby preventing migration of said catholyte through  
the porous cathode and into contact between each  
respective the anolyte stream and each respective  
catholyte stream.

17. (currently amended) A method according to claim 16 wherein:

said catholyte flowing step comprises flowing at least one  
stream of an aqueous hydrogen peroxide solution into  
contact with said at least one porous cathode; and

said anolyte flowing step comprises flowing at least one  
stream of a NaOH/seawater anolyte into contact with  
said at least one cathode, ~~and~~

~~said preventing step comprises providing each said cathode~~  
~~with a membrane which allows OH<sup>-</sup> ions to pass through~~  
~~said membrane while inhibiting a flow of hydrogen~~  
~~peroxide through said membrane.~~

Application Serial No: 10/037,808  
In reply to Office Action of 05 May 2004

Attorney Docket No. 79530

18. (original) A method according to claim 17 wherein said catholyte flowing step comprises flowing said hydrogen peroxide solution at a hydraulic pressure greater than the pressure of the NaOH/seawater anolyte.

19. (canceled).